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EXAMINER

FIORITO, JAMES

ART UNIT

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/712,768
Filing Date: November 13, 2003
Appellant(s): PROCHAZKA ET AL.

G. Peter Nichols
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/7/08 appealing from the Office action
mailed 5/3/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6440383	Duyvesteyn	8-1002
WO 01/00530	Duyvesteyn	1-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5, 9-11, 13-15, 20-36, 40-41 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duyvesteyn (WO 01/00530).

Duyvesteyn teaches the processing of aqueous titanium solutions to a TiO₂ rutile pigment. An aqueous titanium chloride or titanium oxychloride solution is prepared, the solution is evaporated at preferably 200 to 250°C, eg by spray drying, and the resulting TiO₂ is calcined (Page 10). The spray hydrolysis produces hollow thin-film spheres or parts of spheres having a diameter in the range of about 1 to about 100 microns. The calcination temperature lies between 500 and 1100°C (Page 8); calcination duration is 2h in the examples. Claim 26 claims a calcination time of less than about two hours; since the term "about" introduces certain vagueness, the calcination duration of 2h is regarded as falling with the range claimed in claim 26 (Page 9). Following calcination, the TiO₂ is milled and washed. Additionally, chemical control and seeding agents for control of physical and mineralogical characteristics may be introduced in minor quantities into the titanium solution, such as chloride salts of lithium, sodium, potassium or tin (Page 6). Since all other process features are identical, it is regarded as implicitly disclosed, that an open network of rutile crystals will result, that a brookite phase will be formed as a intermediate during calcination, and that the crystallites will have a particle size as claimed in claims 37 to 39 (Page 7). Duyvesteyn teaches recycling of the aqueous salt solution (Figure 2).

Duyvesteyn does not expressly state the catalyzing salt is a mixture of two or more of NaCl, KCl, and LiCl. However, it appears that it would have been obvious to form the catalyzing salt as a mixture of two or more of NaCl, KCl, and LiCl, since Duyvesteyn teaches that minor quantities of chemical control agents may be introduced into the titanium chloride solution to control the physical and mineralogical characteristics of the solid titanium dioxide product (Page 6).

Duyvesteyn does not expressly state the ratio of the catalyzing salts in the mixture; the calcining is conducted at a temperature less than 400 degrees C, or the calcinations time is less than about one minute. However, it is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. In re Boesch, 205 USPQ 215 (CCPA 1980).

Claims 1-8, 13-15, 20-23, 25-27, 29-36, and 40-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duyvesteyn (US 6440383).

Duyvesteyn teaches the processing of aqueous titanium solutions to a TiO₂ rutile pigment. An aqueous titanium chloride or titanium oxychloride solution is prepared (Column 2 Lines 1-5), the solution is evaporated at preferably 200 to 250°C, eg by spray drying, and the resulting TiO₂ is calcined (Column 3 Lines 50-57). The spray hydrolysis produces hollow thin-film spheres or parts of spheres having a diameter in the range of about 1 to about 100 microns (Column 3 Lines 60-67). The calcination temperature lies between 450 and 1100°C (Column 4 Lines 17-33), calcination duration is between 20

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min and 80 hrs. Following calcination, the TiO₂ is milled and washed (Column 4 Lines 49-60). Additionally, chemical control and seeding agents for control of physical and mineralogical characteristics may be introduced in minor quantities into the titanium solution, such as chloride salts of lithium, sodium, potassium or tin (Column 3 Lines 15-32). Since all other process features are identical, it is regarded as implicitly disclosed, that an open network of rutile crystals will result, that a brookite phase will be formed as an intermediate during calcination, and that the crystallites will have a particle size as claimed in claims 37 to 39. Duyvesteyn teaches recycling of the aqueous salt solution (Figure 2).

Duyvesteyn does not expressly state the catalyzing salt is a mixture of two or more of NaCl, KCl, and LiCl. However, it appears that it would have been obvious to form the catalyzing salt as a mixture of two or more of NaCl, KCl, and LiCl, since Duyvesteyn teaches that minor quantities of chemical control agents may be introduced into the titanium chloride solution to control the physical and mineralogical characteristics of the solid titanium dioxide product (Column 3, Lines 15-30).

(10) Response to Argument

Appellant argues the prior art does not recognize using a catalyzing salt that includes at least two of NaCl, KCl, and LiCl, and does not recognize using an amount of the catalyzing salt in an amount from about 3% by weight of the equivalent amount of titanium dioxide to about the amount corresponding to the saturation point of the catalyzing salt.

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In response, the prior art expressly teaches adding minor quantities of chloride salts to a titanium chloride solution, namely sodium chloride and potassium chloride (US '383 at Column 3 Lines 20-23) (See also WO '530 at Page 6 Paragraph 4). The prior art states "minor quantities of the chemical control agents may be introduced into the titanium chloride solution to control the physical and mineralogical characteristics of the solid titanium dioxide product resulting from the conversion of the solutions." (US '383 at Column 3 Lines 15-20) (WO '530 at Page 6 Paragraph 4). Both US '383 and WO '530 used the words "quantities" and "agents", which are both plural. Thus showing the prior art intended the use of more than one chloride salt.

The prior art does not expressly state the salt is in an amount from about 3% by weight of the equivalent amount of titanium dioxide to about the amount corresponding to the saturation point of the salt. However, the minor quantities of salt required by the prior art would reasonably fall within this range by inherency, or in the alternative it would have been obvious to one of ordinary skill in the art to perform the prior art processes wherein the minor quantities of salt are about 3%.

Appellant argues the prior art does not teach the steps of washing, milling, and dispersing the rutile pigment in the correct order.

In response, claims 1 and 2 do not require the steps of washing, milling, and dispersing the rutile pigment to be in any particular sequence.

Appellant argues the prior art does not teach the addition of a eutectic mixture of salts.

In response, it would have been obvious to a person of ordinary skill in the art to optimize the relative quantities of the salts in the minor quantities of chemical control agents taught in US '383 and WO '530.

Appellant argues the prior art does not suggest the use of any calcination temperature less than 400 degrees C.

In response, the prior art teaches calcination temperatures between 450 and 1000 degrees C (US '383 Column 4 Line 24) and (WO '530 Page 8 Paragraph 2 Line 4). The prior art would require the product be calcined at a temperature less than 400 degrees C, since it would have to pass through the temperature range of less than 400 degrees C in order to be calcined at temperatures greater than 450 degrees C.

Appellant argues the prior art does not teach the calcination time is less than 30 minutes or less than 1 minute.

In response, it would have been obvious to a person of ordinary skill in the art to optimize the time required for calcination, and performing the calcination step of the prior art for a time less than 30 minutes or less than 1 minute would yield predictable results.

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Appellant argues the use of $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ in US '383 is different than the tin chloride claimed in instant claims 30 and 31 and significantly changes the chemical composition contrary to the limitations required by instant claim 1.

In response, the prior art expressly teaches tin chloride may be used as a chemical control agent. (US '383 at Column 3 Lines 15-25) (WO '530 at Page 6 Paragraph 4)

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/James A Fiorito/

Examiner, Art Unit 1793

Conferees:

/Kathryn L Gorgos/

Kathryn Gorgos

/Stanley Silverman/

Supervisory Patent Examiner, Art Unit 1793

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